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## Remarks

The Applicants claimed invention provides an I and a Q channel with a single code sequence. However, the code sequence is reversed on one of the channels. In other words, instead of using two unrelated m-sequences for the I and the Q channels, the present claimed invention uses one m-sequence for the I-channel and uses the corresponding reciprocal (or time-reversed) m-sequence for the Q-channel. Because of this, only one distinct sequence needs to be stored in the transceiver.

Claims 1-6, 11, 12, 15, 15, and 16 were rejected under 35 USC §103(a) as being unpatentable over the instant application in further view of Maru (US 2002/0031109) and Ramberg et al. (US 6,741,638).

### Independent claims 1 and 11:

Claims 1 and 11 specifically have the limitation of reversing a code sequence and circular-shifting the reversed code sequence. This is neither taught nor suggested by the prior art of record. Examiner Aghdam states on page 3 of the office action, that FIG. 10 of Maru shows "shifting means for reversing". The Applicants respectfully disagree with the assertion that Maru teaches reversing a code sequence. FIG. 10 of Maru simply contains a table showing a particular case (par. 68) of phase correction resulting from a "frequency deviation [i.e., difference] in carrier between a mobile station and a base station" (par. 67). In FIG. 10, Maru teaches an implementation of "the correlative comparison addition and subtraction of the coherent integration at the carrier frequency integration time" (par. 68). No time reversal of a code is mentioned. Further, since only the receiver has knowledge of any carrier difference between itself and a transmitter, FIG. 10 of Maru must describe a receiver function, rather than the transmitter function of generating modulation signals claimed by the Applicants. Because of this, independent claims 1 and 11 are in proper condition for allowance.

### Independent claims 7 and 17:

Claims 7 and 17 have the specific limitation of a correlator coupled to said receiver memory for determining the correlation between a circular-shifted and time-reversed version of a code sequence. Examiner Aghdam states on page 6 of the office

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action, that this limitation can be found in Maru in figures 6 and 10, and specifically, means 14, 13.

Analysis of FIG. 6 of Maru reveals that Maru fails to teach or otherwise suggest determining the correlation between a circular-shifted and time-reversed version of a code sequence. In particular, element 14 of FIG. 6 sows a "phase shift function", with element 13 showing a simple "shift register". No time-reversed version of a code sequence is ever generated. "Phase shifting" (element 14) is not time-reversing. Additionally, shift register (element 13) fails to time reverse a code sequence since $a_1 \ldots a_k$ is output from both sides of the shift register. Time reversing the output of shift register 13 would require that $a_k \ldots a_1$ be output from one side of the shift register. Because the prior art fails to teach or otherwise suggest determining the correlation between a circular-shifted and time-reversed version of a code sequence, claims 7 and 17 are allowable over the prior art of record.

Independent claims 12 and 13:

Claims 12 and 13 contain the limitations of:

- a bi-directional register operable to store said encoded sequence allowing the sequence to be read in either a forward or a reverse direction, said bi-directional register having first and second read directions; and
- a selector operable to select said first or second read directions according to whether said encoded sequence corresponds to said first or second data symbol

Examiner Aghdam states that bi-directional shift registers are known in the art, and points to Ramberg to show "circular shifting". However, Examiner Aghdam is silent as to where the Applicants' claimed "selector" can be found. Particularly, the Applicants claim a selector selecting read directions according to whether the encoded sequence corresponds to a first or a second symbol. This limitation is not addressed by Examiner Aghdam. Analysis of the prior art fails to show this limitation. Therefore, because the prior art fails to teach or otherwise suggest selecting read directions according to whether the encoded sequence corresponds to a first or a second symbol, claims 12 and 13 are allowable over the prior art of record.

Independent claim 14:

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Claim 14 specifically has the limitation of circular-shifting <u>the time-reversal</u> of said pseudo-noise code. The arguments set forth above clearly show that the prior art fails to teach or otherwise suggest the time-reversal of a pseudo-noise code. Because of this, claim 14 is allowable over the prior art of record.

Regarding all other claims, because these claims depend from allowable base claims, all other claims are in proper condition for allowance.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein; and no amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references. As the Applicant has overcome all substantive rejections given by the Examiner the Applicant contends that this Amendment, with the above discussion, overcomes the Examiner's rejections to the pending claims. Therefore, the Applicant respectfully requests allowance of the application. If the Examiner is of the opinion that any issues regarding the status of the claims remain after this response, the Examiner is invited to contact the undersigned representative to expedite resolution of the matter. Finally, please charge any fees (including extension of time fees) or credit overpayment to Deposit Account No. 502117.

Respectfully Submitted,
Gorday, ET AL.

by: _____

Kenneth A. Haas
Reg. No. 42,614
Phone: (847) 576-6937
FAX: (847) 576-3750

SEND CORRESPONDENCE TO:

Motorola, Inc.
1303 E. Algonquin Rd.
Schaumburg, IL 60196
Customer No. 22917

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